AMENDMENTS TO THE DRAWINGS:

Figure 5 is amended herewith merely to correct a minor spelling error in element 32 (i.e., the blank extraction part).

Figure 9 is amended herewith merely to include reference numeral 2120 for the exemplary "spool reading part" (i.e., "spool readout part") of the spool control service part 2110, which is described in the specification at page 20, lines 11-14. No new matter is added.

The Examiner is requested to acknowledge receipt of and approve the replacements sheets (2) for Figures 5 and 9.

Attachments: Replacement Sheets (2)

Annotated Sheets Showing Changes (2)

REMARKS

Claims 1-22 are all the claims presently pending in the application.

While Applicants believe that the claims are patentable over the prior art of record, to speed prosecution, claims 1, 11-13, and 15-17 have been amended to define more clearly and particularly define the invention.

New claims 18-22 are added to define more clearly and particularly the features of the claimed invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claim 8 stands rejected under 35 U.S.C. § 112, second paragraph.

With respect to the prior art rejections, claims 1-5, 8, 13, and 14 stand rejected under 35 U.S.C. §102(b) as being anticipated by Gasper, et al. (U.S. Patent No. 5,919,730). Claims 6 and 7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gasper and Yano, et al. (U.S. Patent No. 6,035,308). Claims 9-11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gasper and Cass, et al. (U.S. Patent No. 5,946,414). Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Gasper in view of Cass in further view of Hayashi, et al. (U.S. Application Publication No. 2003/016149A1). Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Boswell (U.S. Patent No. 5,559,933) in view of Gasper. Claims

16 and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Boswell in view of Gasper.

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The present invention relates to an invisible information recording method for recording an image being different from a visually perceived image on a part of a sheet of a paper on which an image is recorded, and an image forming apparatus using the same. Further, the invention relates to a printing system which easily retrieves the already printed document data from a part of a printed document formed by the image forming apparatus.

In related art methods and systems for embedding information, a diameter of each dot is typically 0.1 mm. However, a dot of this size is visible, which is not desirable. On the other hand, in the related art methods and systems, when invisible, isolated micro dots are embedded into the image, the recording reliability is deteriorated.

Thus, the related art methods and systems have problems in that, as the result of embedding the additional information, the image quality is deteriorated, it is difficult to read out the embedded information, and/or, when micro dots that cannot be perceived are printed, the reliability is unsatisfactory (e.g., see specification at page 3, lines 13-25, and page 4, line 1; see also page 4, lines 15-21).

The claimed invention, on the other hand, provides an image forming method and apparatus which is capable of embedding a large amount of additional information in an image in an invisible fashion and without deteriorating the image quality (e.g., see specification at page 5, lines 21-24).

According to the novel and unobvious exemplary aspects of the present invention, large amount of information different from an image visually perceived can be embedded so as to be invisible to the naked eye by utilizing blank areas on a recording sheet of paper. In other words, a lot of additional information can be embedded into a visible image by assigning information items, e.g., characters and symbols, to a plurality of patterns each consisting of dots invisible to the naked eye, which are distributed to such an extent that a variation of densities of the distributed dots cannot be visually perceived by the naked eye (e.g., see specification at page 6, lines 8-17).

For example, in the exemplary aspect of the invention illustrated in Figure 5, a blank area extraction part 32 (all reference numerals herein being used for the Examiner's clarity only and not for limiting the claims) extracts a blank area or blank areas from the print page image. Preferably, it extracts a plurality of rectangular blanks from the page image. The information 33 is prepared, which is different from the image to be printed, i.e., the image visually perceived. The information may contain detailed attributes of the printed page, file storing locations, author of the document, page correction history, and others. The information 33 different from the perceived image is converted into an invisible pattern as exemplarily shown in Figure 2, by the invisible pattern conversion part 34. The converted invisible pattern is combined with the blank areas extracted by the blank area extraction part 32, and the resultant data is output to the printer 36 (e.g., see specification at page 15, lines 3-15).

In an exemplary aspect of the invention, as defined for example by independent claim 1, an invisible information recording method includes extracting a location of at least one blank area of a page image of a sheet of paper, wherein the location of the at least one blank area is different from a location of an image, which is visible to the naked

eye, of the page image of the sheet of paper; and recording a digital image on the location of the at least one blank area on the sheet of paper, wherein the digital image includes information in the form of pixels so sized as to be invisible to a naked eye and at a print density invisible to the naked eye.

In another exemplary aspect of the invention, as defined for example by independent claim 15, a printing system includes an archiving printer which prints a document upon receipt of a request of printing the document, and at the same time stores the document as document data into an archive, and upon receipt of a request of reprinting the document stored, reprints the document by using the document data stored in the archive. The archiving printer includes a blank area extracting section that extracts a location of at least one blank area in a page image of a document, wherein the location of the at least one blank area is different from a location of an image, which is visible to the naked eye, in the page image of the document. The archiving printer further includes a recording section for recording archive management information on storage locations of documents in the archiving printer in to the at least one blank area of the document when the document is printed, in a state that the information is invisible to the human eye or needs a careful watching to see the information, a reading section for reading out the information being recorded in the printed document in a state that the information is invisible to the human eye or needs a careful watching to see the information, by reproducing the document printed by the archiving printer by means of reproducing means, and a knowing section for knowing the archive management information of the printed document from the read out information.

II. CLAIM REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claim 8 is rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Particularly, the Examiner asserts that the phrase "*image density is 0.1*" in claim 8 does not include a designation of the units being referred to. Applicants respectfully traverse this rejection for the following reasons.

Applicants note that the "*image density*" (e.g., print density, optical density, etc.) in the present application means the light absorbing ability of the printed image or base material. Applicants further note that "image density" generally is measured in terms of the logarithm of opacity (D = log10 O), where opacity is the light stopping power of a medium. Thus, the image density correctly is indicated as 0.1 (i.e., without indicating a unit of measurement).

For the foregoing reasons, Applicants respectfully submit that the ordinarily skilled artisan would know and understand the meaning of "an image density" of "*0.1 or less*", that such is clear and definite, and that it is not necessary to amend claim 8. Therefore, the Examiner is requested to reconsider and withdraw this rejection.

III. THE CITED REFERENCES

A. Gasper, et al.

Gasper relates to media for restricting copying of a document utilizing one or more microdots that are embedded in the document for providing a non-visual, but machine detectable mark or marks. The detected means for detecting the presence of one or more microdots in the document inhibits a copy machine from copying the document (e.g., see Gasper at Abstract).

B. Yano, et al.

Yano relates to a document data administrating system including a filing means for previously storing data related to particular words, texts, symbols, or graphics as related data files. The system includes medium paper including at least one piece of description data, linking data, and selection data. The system further includes a reading means for reading out selection data and linking data from the medium data, a searching means for searching corresponding related data files from the filing means according to the selection data and linking data each read out by the reading means, and an outputting means for outputting the related data files each searched by the searching means (e.g., see Yano at Abstract).

Yano discloses recording data in code areas (linking data, related data, and other data) with invisible ink or toner each readable in invisible rays such as ultraviolet rays and infrared rays. Yano asserts that visibility (readability) of data as a document for Inper (e.g., Interact paper, medium paper, etc.), can further be improved. Also, Yano asserts that the Inper can be handled on its appearance in the same manner as an ordinary document can be, and disposable Inpers can also be used for memos or the like, which allegedly makes it possible to effectively utilize paper resources (e.g., see Yano at column 33, lines 53-67).

C. Cass, et al.

Cass relates to message values included in a set of valid message values that constitute a coding scheme and which each encoded in an image region, called an encoded signal block, composed of a spatially arranged pattern of colored sub-regions (e.g., see Cass at Abstract; see also column 6, lines 42-46).

Cass discloses that the colored sub-regions have color values produced by modulating a reference color value by a color change quantity expressed as a color space direction in a multi-dimensional color space such that the average color of all of the sub-region colors is the reference color. There is a unique pattern of color-modulated sub-regions for each valid message value in the coding scheme.

In one embodiment, the color space direction is computed to be simultaneously detectable by a digital image capture device such as a scanner and substantially imperceptible to a human viewer, so that the embedded data represented by the pattern of color modulations are visually imperceptible in the encoded signal block.

When the reference color is determined to be the average color of an image region in an original color image, the encoded signal block may replace the image region in the original image, producing an encoded image version of the original image having little or no image degradation. The original image colors become carriers of the encoded data. Signal blocks may be arranged to encode data in only one dimension in an image, which allows for less complex decoding algorithms, or in a two dimensional array or grid-like structure, which allows for a high encoded data density rate.

Cass discloses that its image encoding technique is motivated by the need to reliably encode information at a high density rate in an image, and in particular in graphic or photographic images, without any perceived image degradation or distortion (e.g., see column 6, lines 42-46).

D. Hayashi, et al.

Hayashi relates to a technique for embedding digital-watermark information in image data while minimizing deterioration of the original image quality. Hayashi discloses a data processing apparatus having input means for inputting image data

consisting of a plurality of coefficients, and embedding means for embedding digital-watermark information in coefficients having values falling within a predetermined range of the input image data (e.g., see Hayashi at Abstract).

E. Boswell

Boswell relates to a system and method for transferring and printing files originating on mainframe computer systems, workstations, or personal computers connected within a heterogeneous computer network is disclosed. The printer controller coordinates the distribution of print files across multiple computer systems to attached printers for printing.

In response to incoming files received from another computer system within the network, Boswell's system utilizes file mask attributes to automatically generate transfer requests and print requests. In response to user inputs through a graphical user interface, Boswell's system updates various file databases, print attribute and transfer attribute libraries, and system configurations before generating a transfer or print request. Support for multiple page description languages and multiple printers is provided (e.g., see Boswell as Abstract).

IV. THE PRIOR ART REJECTIONS

A. Claims 1-5, 8, 13, and 14:

Claims 1-5, 8, 13, and 14 stand rejected under 35 U.S.C. §102(b) as being anticipated by Gasper. The Examiner alleges that Gasper discloses all of the features of the claimed invention.

While Applicants believe that the claim 1 (as currently written) is patentable over Gasper, to speed prosecution, claim 1 is amended to define more clearly the claimed

feature of "*extracting a location of at least one blank area of a page image of a sheet of paper, wherein said location of said at least one blank area is different from a location of an image, which is visible to the naked eye, of said page image of said sheet of paper; and recording a digital image on said location of said at least one blank area on said sheet of paper*" (emphasis added)(e.g., see specification at page 10, lines 23-25; page 12, lines 21-23; see also Figures 1 and 3).

According to the claimed invention, the reliability can be improved by embedding the invisible information into a blank area (or a plurality of blank areas) on the sheet of paper (e.g., see specification at page 13, lines 12-23; see also Figures 1 and 3).

Applicants submit that Gasper does not disclose or suggest all of the features of the claimed invention.

For example, in an exemplary aspect of the invention, as illustrated in Figure 5, a blank extraction part 32 (all reference numerals herein being used for the Examiner's clarity only and not for limiting the claims) extracts a blank or blanks from the print page image. Preferably, it extracts a plurality of rectangular blanks from the page image.

The information 33 is prepared, which is different from the image to be printed, i.e., the image visually perceived. The information may contain detailed attributes of the printed page, file storing locations, author of the document, page correction history, and others. The information 33 different from the perceived image is converted into an invisible pattern as shown in Fig. 2, by the invisible pattern conversion part 34. The converted invisible pattern is combined with the blank extracted by the blank extraction part 32, and the resultant data is output to the printer 36 (e.g., see specification at page 15, lines 3-15).

In comparison, Gasper relates to media for restricting copying of a document utilizing one or more microdots that are embedded in the document for providing a non-visual, but machine detectable mark or marks. The detected means for detecting the presence of one or more microdots in the document inhibits a copy machine from copying the document (e.g., see Gasper at Abstract).

Gasper discloses that, in the preferred embodiment of the invention, the microdot pattern is incorporated throughout the document to be copy restricted. Gasper further discloses that microdot placement at all locations within the document insures that the pattern will exist in at least one important area of the document making it impossible to remove the pattern by physical cropping without significantly decreasing the usefulness of any copied document (e.g., see Gasper at column 6, lines 5-14). Gasper also discloses that the microdot pattern can be incorporated into the photographic medium prior to production of the photographic image (e.g., see Gasper at column 9, lines 38-46). That is, all of the medium would be printed with the microdot pattern.

On the other hand, Gasper also discloses that, in another preferred form of the invention, the microdot pattern is incorporated into the document in a pre-selected location or locations not covering the entire document (e.g., see Gasper at column 6, lines 5-14). Gasper does not, however, specifically disclose or suggest that the microdot pattern is recorded on a location of at least one blank area, according to the claimed invention recited in claim 1.

Thus, Applicants submit that Gasper clearly does not disclose or suggest "*extracting a location of at least one blank area of a page image of a sheet of paper, wherein said location of said at least one blank area is different from a location of an image, which is visible to the naked eye, of said page image of said sheet of paper; and*

recording a digital image on said location of said at least one blank area on said sheet of paper", as recited in independent claim 1 (emphasis added).

Therefore, Gasper does not anticipate, or for that matter render obvious, all of the features of independent claim 1 (and claims 2-5).

Also, with respect to claim 8, the Examiner alleges that Gasper discloses "*spacing the image forming elements to be 1.0mm*" (see Office Action at page 5, third full paragraph, citing Gasper at column 7, lines 6-8).

However, claim 8 clearly recites that "*a print density invisible to the naked eye is such that the pixels each so sized as to be invisible to the naked eye are coarsely distributed and an image density is 0.1 or less*" (emphasis added).

Clearly, Gasper only discloses a "spacing" of 1.0 mm, and does not specifically mention the "*image density*", or for that matter, that the "*image density is 0.1 or less*".

Thus, Applicants submit that claim 8 clearly is not anticipated by, or for that matter rendered obvious from, Gasper.

While Applicants believe that claim 13 (as currently written) is patentable over Gasper, to speed prosecution, claim 13 is amended to define more clearly that the "*information ... is recorded into a plurality of locations of blank areas on one page of a digital image*". Thus, according to the claimed invention, the information is not merely recorded "throughout the document" (see Gasper at column 6, lines 6-7) at unidentified locations on the page, as alleged by the Examiner.

Therefore, claim 13 also is not disclosed or suggested by Gasper.

With respect to claim 14, Applicants submit that claim 14 is not anticipated by Gasper for at least the reasons set forth above with respect to claims 1-11, from which claim 14 depends (i.e., multiple dependency).

B. Claims 6 and 7:

Claims 6 and 7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gasper and Yano. The Examiner alleges that Gasper and Yano disclose or suggest all of the features of claims 6 and 7. Applicants submit, however, that Yano does not make up for the deficiencies of Gasper.

Yano relates to a document data administrating system including a filing means for previously storing data related to particular words, texts, symbols, or graphics as related data files (e.g., see Yano at Abstract). Yano discloses recording data in code areas (linking data, related data, and other data) with invisible ink or toner each readable in invisible rays such as ultraviolet rays and infrared rays. Yano asserts that visibility (readability) of data as a document for Inper (e.g., Interact paper, medium paper, etc.), can further be improved. Also, Yano asserts that the Inper can be handled on its appearance in the same manner as an ordinary document can be, and disposable Inpers can also be used for memos or the like, which allegedly makes it possible to effectively utilize paper resources (e.g., see Yano at column 33, lines 53-67).

However, Yano does not specifically disclose or suggest "*extracting a location of at least one blank area of a page image of a sheet of paper, wherein said location of said at least one blank area is different from a location of an image, which is visible to the naked eye, of said page image of said sheet of paper; and recording a digital image on said location of said at least one blank area on said sheet of paper*", as recited in claim 1 (emphasis added).

Thus, Applicants submit that Gasper and Yano, either individually or in combination, do not disclose or suggest all of the features of independent claim 1, from which claims 6 and 7 depend.

C. Claims 9-11:

Claims 9-11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gasper and Cass.

The Examiner alleges that Gasper and Cass disclose or suggest all of the features of claims 9-11. Applicants submit, however, that Cass does not make up for the deficiencies of Gasper.

For example, Cass relates to message values included in a set of valid message values that constitute a coding scheme and which each encoded in an image region, called an encoded signal block, composed of a spatially arranged pattern of colored sub-regions (e.g., see Cass at Abstract; see also column 6, lines 42-46).

That is, Cass merely discloses somewhat similar features as those described by Applicants in the "*Background*" section of the present application (see specification at page 3, lines 9-12).

Neither Gasper nor Cass, however, discloses or suggests "*extracting a location of at least one blank area of a page image of a sheet of paper, wherein said location of said at least one blank area is different from a location of an image, which is visible to the naked eye, of said page image of said sheet of paper; and recording a digital image on said location of said at least one blank area on said sheet of paper*", as recited in claim 1 (emphasis added), from which claims 9-11 depend.

Thus, Applicants submit that claims 9-11 are patentable over Gasper and Cass, either individually or in combination, by virtue of their dependency from claim 1, as well as for the additional features recited therein.

For example, with respect to claim 11, Applicants note that claim 11 does not merely recite that a recording unit may include a "1". Instead, claim 11 recites, *inter alia*,

"*at least one of the significant blocks is a recording unit which always represents "1""*

(emphasis added).

Applicants submit that Gasper and Cass, either individually or in combination, clearly do not disclose or suggest that "*at least one of the significant blocks is a recording unit which always represents "1""*, as recited in claim 11 (emphasis added).

D. Claim 12:

Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Gasper in view of Cass in further view of Hayashi.

The Examiner alleges that Gasper, Cass, and Hayashi disclose or suggest all of the features of claim 12. Applicants submit, however, that neither Cass nor Hayashi makes up for the deficiencies of Gasper.

For example, as mentioned above, Cass does not disclose or suggest "*extracting a location of at least one blank area of a page image of a sheet of paper, wherein said location of said at least one blank area is different from a location of an image, which is visible to the naked eye, of said page image of said sheet of paper; and recording a digital image on said location of said at least one blank area on said sheet of paper*", as recited in claim 1 (emphasis added), from which claim 12 depends.

On the other hand, Hayashi relates to a technique for embedding digital-watermark information in image data while minimizing deterioration of the original image quality. Hayashi discloses a data processing apparatus having input means for inputting image data consisting of a plurality of coefficients, and embedding means for embedding digital-watermark information in coefficients having values falling within a predetermined range of the input image data (e.g., see Hayashi at Abstract).

Hayashi does not, however, disclose or suggest "*extracting a location of at least one blank area of a page image of a sheet of paper, wherein said location of said at least one blank area is different from a location of an image, which is visible to the naked eye, of said page image of said sheet of paper; and recording a digital image on said location of said at least one blank area on said sheet of paper*", as recited in claim 1 (emphasis added).

Thus, Applicants submit that claim 12 is patentable over Gasper, Cass, and Hayashi, either individually or in combination, by virtue of its dependency from claim 1, as well as for the additional features recited therein.

E. Claim 15:

Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Boswell in view of Gasper.

The Examiner alleges that Boswell and Gasper disclose or suggest all of the features of claim 15. Applicants submit, however, that Boswell and Gasper clearly do not disclose or suggest all of the claimed features.

For example, Boswell merely relates to a system and method for transferring and printing files originating on mainframe computer systems, workstations, or personal computers connected within a heterogeneous computer network is disclosed. The printer controller coordinates the distribution of print files across multiple computer systems to attached printers for printing (e.g., see Boswell as Abstract).

The Examiner acknowledges, however, that Boswell does not disclose or suggest a method of printing information in a state that is invisible to the human eye, or a reading section for reading out the information being recorded in an invisible manner (see Office Action at page 11, lines 1-4).

On the other hand, the Examiner relies on Gasper for making up for the acknowledged deficiencies of Boswell.

However, for somewhat similar reasons as those set forth above with respect to independent claim 1, Applicants submit that Gasper clearly does not disclose or suggest "*a blank area extracting section that extracts a location of at least one blank area in a page image of a document, wherein said location of said at least one blank area is different from a location of an image, which is visible to the naked eye, in said page image of said document; and a recording section for recording archive management information on storage locations of documents in the archiving printer in to said at least one blank area of said document when the document is printed, in a state that the information is invisible to the human eye or needs a careful watching to see the information*", as recited in independent claim 15 (emphasis added).

Therefore, Applicants submit that, even assuming *arguendo* that it would be obvious to combine Boswell and Gasper, the resulting combination of Boswell and Gasper clearly would not disclose or suggest at least "*a blank area extracting section that extracts a location of at least one blank area in a page image of a document, wherein said location of said at least one blank area is different from a location of an image, which is visible to the naked eye, in said page image of said document; and a recording section for recording archive management information on storage locations of documents in the archiving printer in to said at least one blank area of said document when the document is printed, in a state that the information is invisible to the human eye or needs a careful watching to see the information*", as recited in independent claim 15 (emphasis added).

F. Claims 16 and 17:

Claims 16 and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Boswell in view of Gasper.

Applicants submit that Boswell and Gasper, either individually or in combination, also do not disclose or suggest all of the features of claims 16 and 17 by virtue of their dependency from claim 15, as well as for the additional features recited therein.

V. NEW CLAIMS

New claims 18-22 are added to define more clearly and particularly the features of the claimed invention.

For example, new claim 18 recites "*recording the digital image only in said at least one blank area of said page image of said sheet of paper*". New claim 19 recites that the "*recorded information comprises at least one of a horizontal arrangement and a vertical arrangement in said at least one blank area of said page image of said sheet of paper*" (e.g., see exemplary aspects of specification at page 13, lines 12-23). New claim 20 recites "*extracting a plurality of substantially rectangular blank areas from said page image of said sheet of paper*" (e.g., see exemplary aspects of specification at page 15, lines 4-5). New claim 21 recites "*extracting a plurality of locations of blank areas from said page image of said sheet of paper*" (see exemplary aspects of specification at page 7, lines 7-12; see also exemplary aspects of specification at page 15, lines 20-25, and page 16, lines 1-2). New claim 22 recites "*recording a copy of at least a portion of said information into at least one other location of said plurality of locations of said blank areas*" (e.g., see exemplary aspects of specification at page 7, lines 7-12; see also exemplary aspects of specification at page 15, lines 20-25, and page 16, lines 1-2).

Applicants submit that claims 18-22 are patentable over the prior art of record for somewhat similar reasons as those set forth above, as well as for the additional features recited therein.

VI. INFORMALITIES

A. Drawing Objection

The Examiner objects to the drawings because reference numeral 2120 described on page 20, line 12 of the specification is not included in the drawings.

To obviate this objection, Figure 9 is amended herewith merely to include reference numeral 2120 for the exemplary "spool reading part" (i.e., "spool readout part") of the spool control service part 2110, which is described in the specification at page 20, lines 11-14.

Figure 5 also is amended herewith merely to correct a minor spelling error in element 32 (i.e., the blank "extraction" part).

B. Specification Objection

The Examiner also objects to the specification because of informalities. The specification is amended to obviate the Examiner's objections.

The specification also is amended merely to correct minor typographical errors.

C. Claim Objection

The Examiner also objects to claim 1 because of informalities. The Examiner suggests amending claim 1 so that the phrase "*recording a digital image on a blank on a sheet of paper*" reads "*recording a digital image on a blank sheet of paper*".

However, Applicants respectfully submit that the Examiner's suggested language does not appear to correspond to the features of the claimed invention, since the present

invention does not disclose recording the image on a "*blank sheet of paper*". Instead, the specification clearly discloses recording the image on a "*blank area*" on the page (e.g., see specification at page 10, lines 23-24).

Therefore, to speed prosecution, claim 1 is amended merely to clarify this feature of the claimed invention, thereby obviating the Examiner's objection.

VII. CONCLUSION

In view of the foregoing, Applicants submit that claims 1-22, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: September 28, 2005

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FIG.5

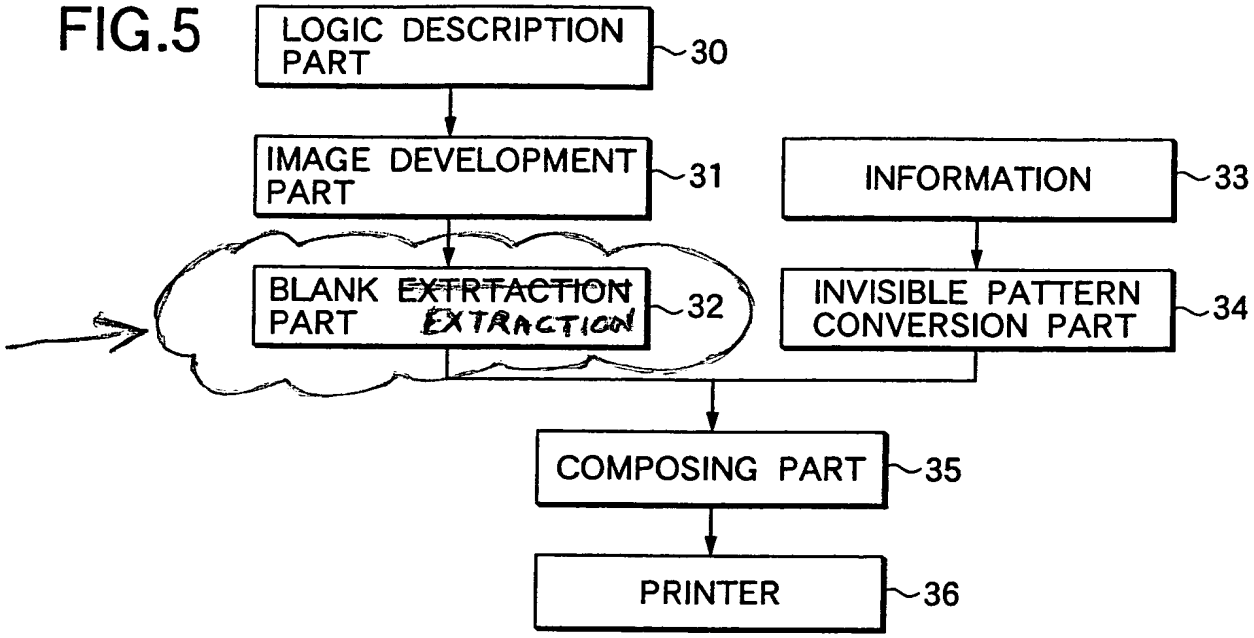
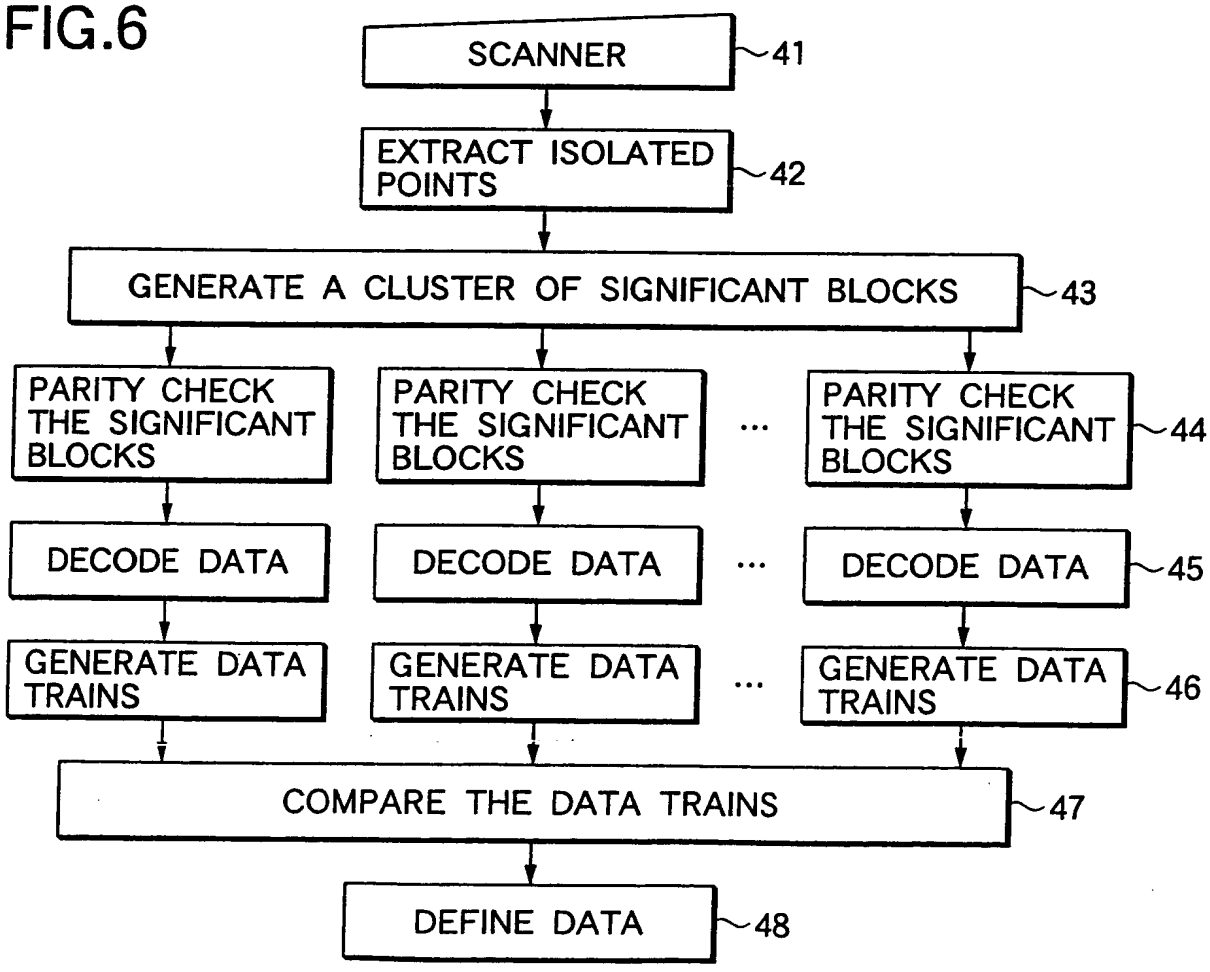

LOGIC DESCRIPTION PART
30
IMAGE DEVELOPMENT PART
31
INFORMATION
33
BLANK EXTRTACTION EXTRACTION PART
32
INVISIBLE PATTERN CONVERSION PART
34
COMPOSING PART
35
PRINTER
36

FIG.6


SCANNER
41
EXTRACT ISOLATED POINTS
42
GENERATE A CLUSTER OF SIGNIFICANT BLOCKS
43
PARITY CHECK THE SIGNIFICANT BLOCKS
PARITY CHECK THE SIGNIFICANT BLOCKS
...
PARITY CHECK THE SIGNIFICANT BLOCKS
44
DECODE DATA
DECODE DATA
...
DECODE DATA
45
GENERATE DATA TRAINS
GENERATE DATA TRAINS
...
GENERATE DATA TRAINS
46
COMPARE THE DATA TRAINS
47
DEFINE DATA
48

OIPE
SEP 28 2005
PATENT & TRADEMARK OFFICE

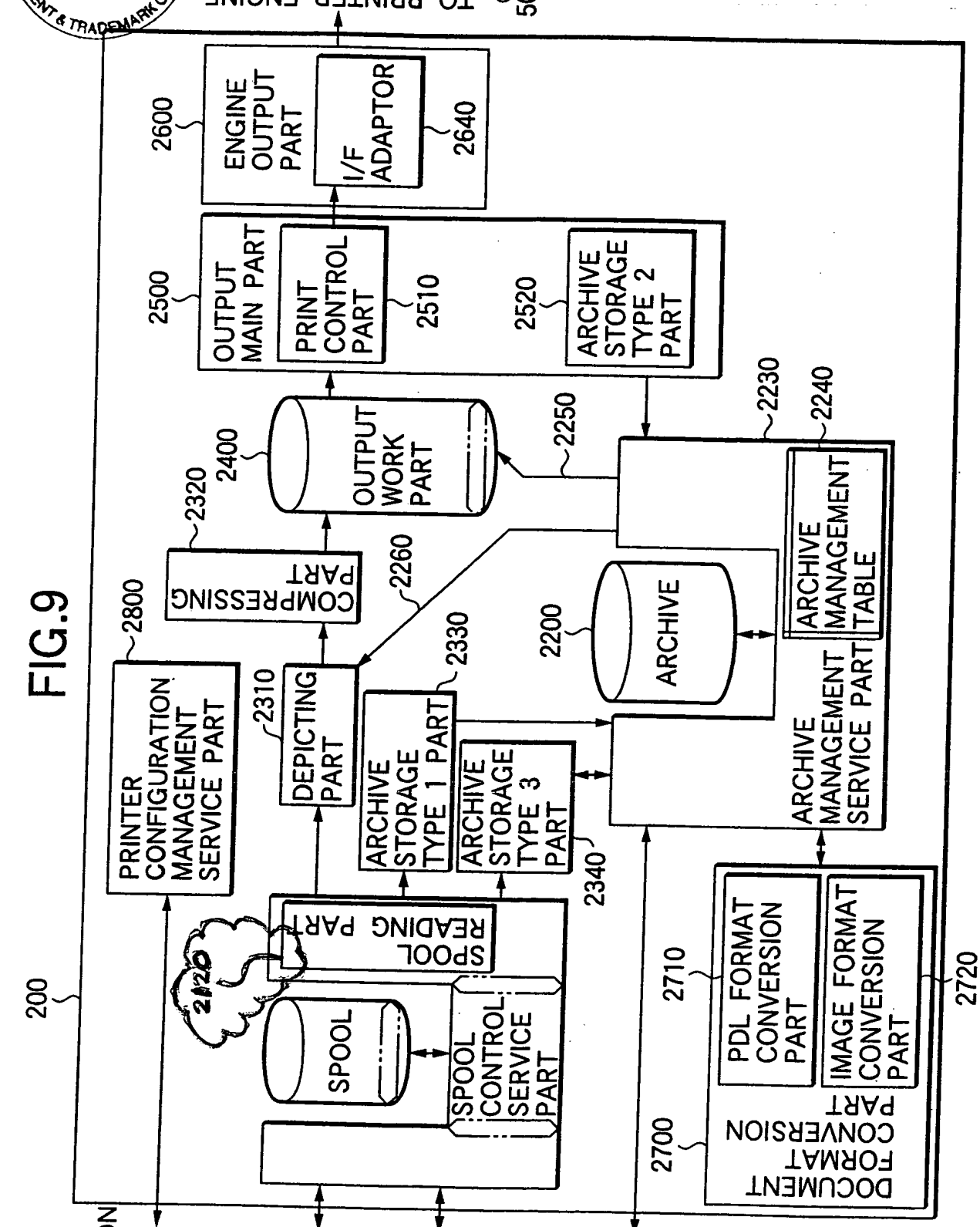



FIG.9